

E-GOVERNMENT AWARENESS AMONG THE TECHNO-DISADVANTAGED IN THE UNITED STATES

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Abstract

This exploratory research focuses on awareness among techno-disadvantaged citizens in the United States. Specifically, we address whether awareness is associated with visitation and whether there are differences between those who are aware and those who are not aware. Following up on a theory-based community initiative designed to improve computer literacy and access to information and communication technologies (ICT) for members of an underserved public housing community, a survey was undertaken. The results indicate that awareness is associated with visitation. Differences in demographic characteristics, perceived ease of use (PEOU), and perceived access barriers between those who are aware of e-government websites, and those who are not, were found. While nearly half of the respondents are neither aware of nor have visited e-government websites, a slight majority is partaking of e-government services. We identify directions for future research and conclude by emphasizing the value of a theory-based community initiative to improve computer literacy, provide access to ICT, and advance e-government inclusion.

Keywords: E-government, Digital Divide, Awareness, Visitation, Theory-based Community Initiative.

1 INTRODUCTION

In a study of e-government use by citizens in the United States (U.S.), the digital divide was found to be more pronounced among government website visitors than among Internet users in general (Thomas and Streib, 2003). Equity in citizen access of e-government services requires that the digital divide be addressed. Citizens whose use of government services is the greatest are the least likely to be connected to the Internet (Dugdale et al., 2005). A major challenge is how to achieve more involvement and encourage greater interaction with e-government among such citizens (ICT Results, 2008).

This paper explores the digital divide and e-government awareness in the U.S. by surveying members of a technologically disadvantaged public housing community and neighboring households. This study, which is part of a larger study (Sipior et al., 2011), follows up on a community organizing strategy to narrow the digital divide for an underserved community (Sipior et al., 2004). A survey was undertaken in May 2008 to gain insight into the types of e-government websites which digitally disadvantaged citizens are aware of and visit. Our intent is to understand such awareness to gain insight into how to better serve techno-disadvantaged citizens for the purpose of fostering greater inclusiveness.

First, we address the digital divide and e-government inclusion. We then discuss previous research addressing awareness of e-government websites. Next, our research questions and the research methodology utilized for this field study are presented. Finally, the results, discussion, limitations, and future research directions are presented. We conclude that awareness leads to visitation and there are differences among those who are aware versus not aware of e-government services. These results may provide insight for governments in planning and implementing ICT policies to achieve greater access to e-government services in underserved communities. Finally, we emphasize the importance of the community-based initiative to foster awareness, thereby advancing e-government inclusion.

2 THE DIGITAL DIVIDE AND E-GOVERNMENT INCLUSION

E-government risks increasing the disadvantage of already disadvantaged citizens unless inclusiveness of all citizens in e-government usage is encouraged (Shelley et al., 2006; Dugdale et al., 2005). A necessary condition for equity in information access is that citizens have Internet access. The divide between those with access and skills to use the Internet and new information and communication technologies (ICT) and those without, or in other words, the gap between the ‘technology haves’ and ‘have-nots’ is referred to as the digital divide (Holmes, 2002; OECD, 2001).

Public Internet access in the U.S. was found to be the most important factor affecting the use of online government services in a study addressing the adoption of e-governance (Prattipati 2003). Among factors reported by Golubeva and Merkurieva (2006) as constraining e-government demand in Russia are low Internet penetration and a lack of awareness of e-services currently provided. Pósfaí and Féjer (2008) report that e-government service usage is very low because of the digital divide, which excludes a large segment of the population of Hungary from the e-world. Mellor (2006) however, found that it is low awareness of e-government that precludes increasing usage, rather than barriers such as access to technology, computing skills, or trust in e-government.

While the Internet has the potential to create well-informed and empowered citizens, it will also help to change the passive relationship most people have with the government (Symonds 2000). Exclusion from interactive opportunities, such as online voting, will weaken the voice of those who are techno-disadvantaged (Althoff 2004). These individuals are among the citizens likely to benefit most from government services (Lamb 2004). Empirical evidence suggests that simply providing access to ICT does not guarantee its use unless the users themselves are addressed (Brookes 2004). This study focuses on awareness of e-government websites by members of a techno-disadvantaged community.

3 AWARENESS OF E-GOVERNMENT WEBSITES

We found no previous research which analyzed the differences between techno-disadvantaged citizens who are aware of e-government and those who are not. Previous research however, underscores the importance of awareness of e-government websites to e-government inclusion. Saatçioğlu et al. (2009) regard awareness as a critical success factor for e-government. Mellor (2006) stated that the key finding of a study focusing on the e-citizen project in the U.K. to increase awareness by developing targeted marketing campaigns was that lack of awareness is currently holding back usage in some local areas. Chan et al. (2010) identify awareness as the key concern for governments in the first stage, the market penetration stage, in launching e-government technology. Jaeger (2003) notes that while the United Kingdom spent billions of pounds on e-government services, most citizens were unaware of the availability of the services or were reluctant to use them.

Van Aerschot and Rodousakis (2008) found the economically disadvantaged to be less aware of e-government services in general than those with a higher income. Further, the lack of awareness of the range of possibilities the Internet and e-government services offer were reported to be a factor in why individuals are not motivated or interested in learning how to use the Internet. The most common reasons cited for not making use of e-government included lack of awareness of available services and relevant web addresses, and lack of human support and knowledge of how to use such services. Advantages cannot be perceived if an individual is not aware of services offered.

Xiong (2006) suggests that awareness of the existence of e-government will lead to an increase in citizens seeking and using e-government in China, which will result in attaining benefit from e-government. Empirical evidence from a study of e-government use among the general populace in Lebanon (Charbaji and Mikdashi, 2003) supports a positive relationship between awareness and intention to use e-government. Further, Charbaji and Mikdashi (2003) found that awareness of e-government websites directly leads to positive feelings toward e-government, and directly and indirectly leads to participation in e-government. Al-Fakhri et al. (2008) suggest that increasing the awareness of e-government among the public at-large in Saudi Arabia would improve the effectiveness of government agencies' websites. Based on the findings of Mellor (2006), low awareness on the part of citizens in general precludes the use of e-government websites. Mellor (2006) notes the importance of this finding in demonstrating that if citizens are not aware of an e-service they will not use it, no matter how accessible, well-designed, or beneficial the e-services is. Van Dijk et al. (2008) found knowledge of the availability of government services to be a condition of actual use.

Addressing the techno-disadvantaged in particular, Ke and Wei (2004) found that awareness of e-government is an important factor in encouraging citizen use of such websites. Ke and Wei (2004) reported that e-government awareness among the digitally disadvantaged in Singapore was successfully increased through a month-long awareness campaign repeated annually, along with the launch of a literacy program to enhance computer literacy. The deployment of e-government in Singapore is a success story.

4 RESEARCH QUESTIONS

This exploratory research seeks to confirm the positive association between awareness and visitation of e-government websites, depicted in Figure 1. Golubeva and Merkuryeva (2006) view the evaluation of e-government awareness as essential to understanding potential demand for online services. We hypothesize:

H1. There is a positive association between awareness and visitation of e-government websites.

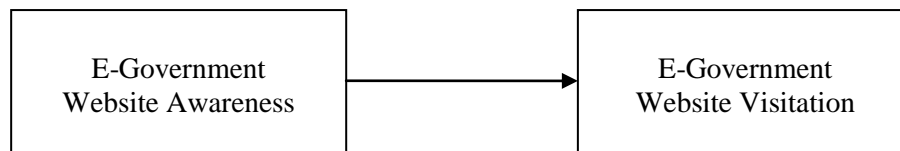


Figure 1. Positive association between awareness and visitation of e-government websites.

Further, we hypothesize that those who are aware of e-government differ from those who are not aware. We draw upon Porter & Donthu (2006) for demographic characteristics including age, gender, educational attainment, employment, household income, and household type:

H2a. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to age.

H2b. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to gender.

H2c. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to educational attainment.

H2d. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to employment.

H2e. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to household income.

H2f. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to household type.

We include internet experience and hours of Internet use per week, based on Porter & Donthu (2006):

H3a. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to internet experience.

H3b. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to hours of Internet use per week.

We also include factors associated with technology acceptance. From Davis et al.'s (1989) technology acceptance model (TAM), the most widely applied research paradigm to understand user acceptance of technology (Venkatesh, 2000), we include PEOU, PU, and Attitude:

H4a. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to perceived ease of use.

H4b. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to perceived usefulness.

H4c. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to attitude toward use.

We consider techno-disadvantage by including perceived access barriers, based on Porter & Donthu (2006). The inclusion of perceived access barriers is consistent with facilitating conditions, included in previous research such as Al-Shafi and Weerakkody (2010).

H5. Techno-disadvantaged citizens who are aware of e-government differ from those who are not aware according to perceived access barriers.

Finally, the specific types of e-government websites visited are identified to facilitate exploration of the reasons for visiting and issues encountered while engaging in e-government services. Limited government resources must be allocated to develop and maintain various e-services. An understanding of the specific e-services sought by the techno-disadvantaged can assist in determining how to better serve their needs and enhance their user experience.

5 METHODOLOGY

A survey of members of a technologically underserved community was undertaken. The survey methodology was employed because it increases generalisability, facilitates replicability, and provides statistical power (Dooley, 2001). This section describes the technologically underserved community, the sample, and measures.

5.1 A Technologically Underserved Community

We focus on the William Penn (WP) Housing Development in Chester, Pennsylvania (PA), U.S. The selection of the WP Housing Development community members is narrow in scope. However, the community members represent the technologically disadvantaged as few possess skills or training in computer technology and have limited access to computer technology (see Sipior et al., 2004). Further, a community development plan, based on the theoretical premises of the Assets-Based Community Development Model (Kretzmann and McKnight, 1993), has been underway in this community for over a decade. Among other initiatives, the plan includes providing access to personal computers and training members of the community in computer use. Thus, the community development plan serves as an intermediary, as identified by Al-Sobhi et al. (2010), in training citizens in self-use of e-government services

The WP Housing Development is located in a formerly industrial city, Chester, PA, USA, cited as "one of the most distressed cities in the nation" (Council of the City of Chester 1994). The low-income population of 39,000, which has the highest infant mortality rate in PA, is 65% African-American (Worsham 2000). A class action suit was filed in 1987 by all residents of 1,732 Chester Housing Authority (CHA) public housing units claiming "substandard, intolerable and uninhabitable" housing including "dark hallways strewn with garbage, human waste, and the thrown-away

paraphernalia of drug and alcohol activity; inadequate plumbing and sewage; unsafe electrical systems; leaking roofs; and doors without locks" (*Clements v. City of Chester*, 1990). As a result, substandard housing units were demolished and new housing was built. The WP Housing Development, completed in March 1999, includes reasonably attractive garden apartments and a multi-room community center. However, residents, the majority of whom are African-American, are surrounded by the disturbing presence of social ills.

This study follows up on a community-based initiative designed to stimulate computer literacy and access to ICT for members of this techno-disadvantaged public housing community and neighboring households (Sipior et al., 2004) and a study of t-government acceptance (Sipior et al., 2011). The theoretical premises of the Assets-Based Community Development Model (Kretzmann and McKnight, 1993) were applied to build local capacities of the community. According to this theoretical model, an effective local organizing strategy is fundamental to successful community empowerment and community self-sufficiency. The WP Tenants Association initiated a community development plan, with assistance from volunteers including the authors; a Community Organizer, a position held by a professional community program planner; and Unity Center, Inc., a nonprofit corporation. Based on a survey of community needs, the WP Tenants Association Preliminary Development Plan was formulated to address community needs, securing resources to provide ICT access, and coordinating volunteers to provide computer training. Among the priorities of the plan is access to technology and technological skills.

In response to the priorities in the Preliminary Development Plan, a computer training program was launched in the fall of 2000 and continues through the present. This program provides on-site training to members of the community by university students. This community thereby increased their capacity to access the Internet and be positioned to participate in and use e-government. For a detailed discussion of narrowing the divide within this community, please see Sipior et al. (2004). External threats to the community initiative, including isolation from mainstream society not unlike that of an inner city, exploitive dependency by those ostensibly assisting the community, and a culture of failure, contribute to the lingering divide (Sipior and Ward, 2005).

5.2 Sample

The WP Housing Development and neighboring households, a community representative of the disadvantaged side of the digital divide, served as the population from which a sample of 37 community members responded to a questionnaire in May 2008. The 37 respondents were active in training, provided by student volunteers, or in using the computers. Sample size is limited by the number of members who chose to partake in training or avail themselves of the computer lab in the Community Center. Although the sample size is small, a 100% response rate was attained. Increasing the sample size, by including other government housing development members for example, would not capture the community members' capacity to access personal computers and the Internet, and training afforded by the theory-based community development plan. If a small sample size prohibits such research, an opportunity to conduct research on naturally occurring phenomena is lost. Respondent characteristics, according to community members who are aware of e-government websites and those who are not aware, are presented in Table 1.

Demographic Characteristic	Not Aware (n = 18)	Aware (n = 19)
Age	Mean: 54.9 Range: 38-69 years of age	Mean: 34.8 Range: 19-54 years of age
Gender	Male: 16.7% Female: 83.3%	Male: 26.3% Female: 73.7%
Race	African American: 100%	African American: 100%
Educational Attainment	Mode: 72.2% High school diploma	Mode: 100% High school diploma
Employment	Overall: 44.4% employed	Overall: 89.5% employed
Household Income	Mode: 55.6% US\$15-25,000	Mode: 47.4% US\$35-45,000
Household Type	Single: 11.1% Single with children: 50.0%	Single: 26.3% Single with children: 42.1%

	Married: 27.8% Married with children: 11.1%	Married: 10.5% Married with children: 21.1%
Internet Experience	Have experience: 67.6% Have no experience: 32.4%	Have experience: 100.0% Have no experience: 0.0%
Hours of Internet Use per Week	0 hours: 83.3% 1 hour: 11.1% 4 hours: 5.6%	0 hours: 10.5% 1-7 hours: 47.4% 10-21 hours: 42.1%

Table 1. Characteristics of Respondents Who are Aware/Not Aware.

5.3 Measures

E-government website awareness and e-government website visitation were measured with open-ended questions by providing respondents with a list of e-government website categories and asking respondents to indicate which of those website categories they are aware of, have visited, and the number of times visited. E-Government Website Awareness is the total number of websites of which respondents are aware; E-Government Website Visitation is the total number of times websites were visited.

Demographic characteristics including Gender, Race, Educational Attainment, Employment, Household Income, and Household Type were measured with single item measures, based on categorical responses. Age, Internet Experience, and Hours of Internet Use per Week were measured with open-ended questions.

PU, PEOU, Attitude, and AB were measured using multiple-item scales, based on validated measures from previous research, adapted to the context of the study. Measurement items for PU and PEOU are based on Davis et al. (1989), Carter and Belanger (2005), Carter (2008), and Carter and Weerakkody (2008). Items to measure Attitude and AB were adapted from Porter & Donthu (2006). All items were measured using a five-point Likert-type scale, with anchors of 'strongly agree' and 'strongly disagree.'

A review of the questionnaire was completed by three colleagues with expertise in the subject area. Additionally, the questionnaire was pilot tested, which resulted in minor changes.

6 RESULTS

Hypothesis 1 is supported by regression analysis. We confirm a positive association between awareness and visitation of e-government websites, as presented in Table 2. Nearly half of the respondents (48.6%) were neither aware of nor visited any e-government websites.

Dependent Variable	Independent Variables	Adjusted R ²	F	Standardized Coefficients	t	Sig.
E-Government Website Visitation		0.685	79.316			.000
	E-Government Website Awareness			.833	8.906	.000

Table 2. Results of regression analysis confirming a positive association between awareness and visitation of e-government websites.

Based on the type of scale data, we applied the independent-samples test for interval scale data as shown in Table 3, crosstabulations for nominal scale data as shown in Table 4, and crosstabulation for ordinal scale data as shown in Table 5, to test Hypotheses 2a-f. We found support for Hypotheses 2a, 2c, 2d, and 2e, but not Hypotheses 2b and 2f, indicating partial support that the demographic characteristics of those who are aware of e-government differ from those who are not aware. Specifically, those who are aware are significantly younger in age ($t = 6.420$; $p < .001$), have a higher level of education (Somers' $d = .572$; $p < .01$), are employed (Chi-Square = 8.553; $p < .05$), and have a higher household income (Somers' $d = .510$; $p < .001$) than those who are not aware of e-government.

The results of the independent-samples test, presented in Table 3, provide support for both Hypotheses 3a and 3b, revealing significant differences in internet experience and hours of internet use per week between those who are aware of e-government and those who are not. Those who are aware of e-government have significantly more years of internet experience ($t = -6.547$; $p < .05$) and use the Internet more hours per week ($t = -4.824$; $p < .001$) than those who are not aware of e-government.

Variable	Not Aware (n = 18)		Aware (n = 19)		t	Sig.
	Mean	Standard Deviation	Mean	Standard Deviation		
H2a. Age (in years)	54.94	9.315	34.79	9.756	6.420	.000
H3a. Internet Experience (in years)	1.00	1.680	7.11	3.680	-6.547	.043
H3b. Hours of Internet Use per Week	.33	.970	8.00	6.856	-4.824	.000

Table 3. Interval scale variables: Results of independent samples test for t-test groups Aware/Not Aware.

Dependent Variable	Independent Variable	Pearson Chi-Square	Asymp. Sig. (2-sided)	Directional Measures		
				Lambda	Asymp. Std. Error ^a	Approx. Sig.
Awareness	H2b. Gender	.508	.476	.056	.291	.853
	H2d. Employment Status	8.553	.003	.444	.143	.013
	H2f. Household Type	3.290	.510	.222	.240	.410

^a Not assuming the null hypothesis.

Table 4. Nominal scale variables: Results of crosstabulations for Employment Status and Spouse's Employment Status.

Hypotheses 4a-c were tested by applying crosstabulations for ordinal data, as presented in Table 5. The results provide support for Hypothesis 4a, but not Hypotheses 4b and 4c, as shown in Table 5. PEOU (Somers' d = .496; $p < .001$) is significantly higher for those aware of e-government than for those not aware of e-government.

Dependent Variable	Independent Variable	Somers' d	Asymp. Std. Error ^a	Directional Measures	
				Approx. T	Sig.
Awareness	H2c. Education	.572	.084	2.630	.009
	H2e. Household Income	.510	.066	7.542	.000
	H4a. PEOU	.496	.097	5.465	.000
	H4b. PU	.164	.139	1.173	.241
	H4c. Attitude	.141	.126	1.104	.270
	H5. AB	-.501	.106	-4.972	.000

^a Not assuming the null hypothesis.

Table 5. Ordinal scale variables: Results of crosstabulations for Education and Household Income.

Hypothesis 5, which considers the difference in perceived access barriers by those aware of e-government websites and those not aware, is supported by the crosstabulations presented in Table 5. AB (Somers' $d = -.501$; $p < .001$) are perceived to be significantly lower by those who are aware of e-government websites than those who are not.

7 DISCUSSION

Nearly half of the respondents (48.6%) were neither aware of nor visited any e-government websites, while among the remaining slight majority government websites are the primary destination. The respondents are therefore among the population who looks to government services, but nearly half of them do not participate in e-government. The results are consistent with Shelley et al. (2006) and Dugdale et al. (2005) who found that e-government risks increasing the disadvantage of already disadvantaged citizens unless inclusiveness of all citizens in e-government usage is encouraged.

Consistent with Charbaji and Mikdashi (2003), who found a positive relationship between awareness and intention to use e-government, and van Dijk et al. (2008) who found that knowledge of the availability of government services is a condition of actual use, we found a positive relationship between awareness and visitation. This finding is also consistent with Mellor (2006) who that if citizens are not aware of an e-service they will not use it, no matter how accessible, well-designed, or beneficial the e-services is.

Although public Internet access in the U.S. was found to be the most important factor affecting the use of online government services (Prattipati 2003), our results confirm those of Brookes (2004) which suggest that simply providing access to ICT does not guarantee its use unless the users themselves are addressed. The research of Golubeva and Merkurjeva (2006), Mellor (2006), Pósfaí and Féjer (2008), and Xiong (2006) confirm that e-government inclusion requires that citizens not only have Internet access and computing skills, but awareness of e-government services on the Internet.

While we found no previous research which analyzed the differences between techno-disadvantaged citizens who are aware of e-government and those who are not, previous research has characterized users of e-government services. Our results are in line with those of Dimitrova & Chen (2006) who also address the digital divide and conclude that age, education, and income are significantly related to citizens' engagement with e-government. We found those who are aware of e-government are young, have a higher educational level, and have a higher household income than those who are not aware of e-government. In addition to these demographic characteristics, we also found those who are aware hold employment. Our results are also similar to those of other studies addressing the demographic characteristics of e-government users. There is a consensus that e-citizens tend to have a higher educational level and higher income (Hart-Teeter, 2003; Thomas & Streib, 2003; Shelley et al., 2006).

Our findings indicate that the techno-disadvantaged who are aware of e-government have more years of internet experience and use the Internet more hours per week than those who are not aware. Van Aerschot and Rodousakis (2008) found the lack of awareness of the range of possibilities the Internet and e-government services offered to be a factor in why citizens are not motivated or interested in learning how to use the Internet. The most common reasons cited for not making use of e-government included lack of awareness of available services and relevant web addresses, and lack of human support and knowledge of how to use such services. Advantages cannot be perceived if an individual is not aware of services offered. Thus, encouraging internet experience and use can be important in increasing awareness of e-government services.

Our findings reveal PEOU to be higher for those techno-disadvantaged who are aware of e-government than for those not aware. We also found that awareness is positively associated with visitation of e-government websites, which is consistent with Mellor's (2006) finding that awareness results in increased use of e-government. Although we cannot speak directly to the causality of awareness leading to visitation and increased use, which in turn leads to a perception of greater ease of use, this relationship is possible. It would be interesting to confirm, in future research, whether this causation is present.

Accessibility or cost of Internet access is cited as a factor associated with technology use (Mathieson, 1991; Venkatesh and Brown, 2001). Citizens may be excluded from e-government because they are unable to access the Internet and therefore e-government services (Lau, 2003). Carter and Weerakkody (2008) found access to be a barrier to e-government adoption. Porter and Donthu (2006) found no significant relationship between access barriers and Internet use, based on a survey administered to a convenience sample of real consumers, providing conflicting results. Our results indicate that access barriers are perceived to be significantly lower by those who are aware of e-government websites than those who are not. This finding is reasonable in light of our finding that awareness leads to visitation among the techno-disadvantaged who, in our sample, have access to personal computers. As Prattipati (2003) found, the key to increasing use of government websites is public Internet access at a nominal cost or no cost.

8 RECOMMENDATIONS

Narrowing the digital divide, to bring inclusivity to e-government, requires a comprehensive approach rather than a quick fix. We recommend a theory-based community-wide initiative which is driven by a local community program and strategy to initiate and sustain members' use of technology. The key factors in reducing the divide include access to computing resources, education and training, and sustained use (Sipior et al., 2004). By following a theory-based community organizing strategy, with links and partnerships to external entities, community members gain ownership in their own future (Sipior et al., 2004). Such a program which creates and retains the capacity and capability among community members to utilize technology can make citizens feel more engaged with the process of democratic government (Cabinet Office, United Kingdom Government, 2006).

Consistent with Golubeva and Merkuryeva (2006) and Pósfai and Féjer (2008), we recommend promotional campaigns to stimulate demand for available e-services. Active dissemination and promotion both online and offline should be undertaken to reach areas with low Internet penetration (Golubeva and Merkuryeva, 2006). Pósfai and Féjer (2008) report that primary in achieving the eHungary Programme 2.0 goals of narrowing the digital divide by assisting underdeveloped communities, thereby creating equal opportunities in the information society to strengthen economic competitiveness is increasing awareness about e-government services. Awareness must be coupled with Internet access, general computing skills, and education and assistance in the use of e-government (Xiong, 2006). Additionally, user feedback is necessary to determine priority directions for current e-services and subsequent development (Golubeva and Merkuryeva, 2006).

We agree with Mellor's (2006) recommendation for a well-funded comprehensive marketing campaign to drive awareness to optimal levels to attain repeat use. Further, the campaign budget must be sufficient and realistic in the long run to create and maintain citizen interest. Mellor (2006) found that targeted marketing campaigns have an impact on awareness levels and subsequently use of e-services. Specifically, awareness of the e-service more than doubled among those in the target segment, from 21 per cent before the campaign to 47 per cent post. Usage of the e-service, in turn, significantly increased from 12 per cent to 21 per cent. Finally, interest in using the e-service increased from 47 per cent to 59 per cent.

A well-developed marketing plan should include outcomes assessments to determine the effectiveness of such campaigns. Mellor (2006) concluded that marketing campaigns targeting specific segments of the population is effective in increasing awareness and in turn usage. Further, the interest of specific segments could be heightened by determining specific services of interest to them and promoting those e-services in particular. The national governments of Canada and Singapore have used media communications strategies to promote e-service use, but the success of these communications has not been reported (Mellor, 2006). Success measures, such as usage rates can be used in determining budgets corresponding to savings resulting from productivity efficiencies realized. This alignment in saving with budget outlays contributes to the long run sustainability of marketing efforts.

9 LIMITATIONS AND FUTURE RESEARCH

This empirical field research, as with any field studies, has limitations. The sample size is small because it includes those members, within the natural setting of a public housing community, who chose to participate in training or use the computer lab during spring 2008. Further, by focusing on one techno-disadvantaged community in the U.S., the generalizability of the findings is limited. We encourage future research to replicate this study in other communities, and in other countries, to validate the empirical results. This study was based on a cross-sectional design. Hence the measures were obtained at only one point in time. Future research could employ a longitudinal design to capture awareness and visitation over an extended time frame to measure changes in e-government website visitation over time.

Additionally, responses are based on self-reporting. The accuracy of self-reporting is questionable because respondents may report what they believe the researcher expects to see, or report what reflects positively on their own abilities, knowledge, beliefs, or opinions (Cook and Campbell, 1979). The reliability of self-reported data is also questionable because, according to cognitive psychologists, human memory is fallible (Schacter, 1999). Future studies could use both qualitative and quantitative measures involving in-depth interviews, actual usage, and observations to improve the accuracy and reliability of data collected.

Finally, e-government has emerged as an effective means of delivering government services to citizens (Weerakkody et al., 2009). The citizen-centric focus of e-government calls for future research to more fully understand the techno-disadvantaged citizen experience in using e-government, since such socially underprivileged groups are likely to derive the most benefit from government services.

10 CONCLUSION

This citizen centric research is among the limited studies that provide insight into e-government inclusion among those on the disadvantaged side of the digital divide. The specific thrust was to determine whether awareness leads to visitation and further, whether there are differences among those who are aware versus not aware of e-government services. Our findings identified the demographic characteristics, internet experience and use, perceived ease of use, and perceived access barriers. The focus on understanding awareness of e-government may assist governments in planning and implementing e-services to include members of digitally disadvantaged communities. For example, citizens of Australia were not aware of e-government services and there was a perceived lack of promotional efforts to create awareness (Australian Government, No Date). The Australian government acknowledged the need to promote e-government websites to interested citizens.

The community organizing strategy, designed to stimulate computer literacy and access to ICT for residents and neighbors of an underserved public housing community, is effective in advancing awareness, which is in turn associated with visitation of e-government services among residents who partook in training or availed themselves of the computer lab. Although nearly half of the respondents (48.6%) are neither aware of nor have visited e-government websites, a slight majority of respondents are partaking in e-government services. The inclusion of the slight majority underscores the importance of such community-based initiatives that foster awareness and visitation of e-government websites, thereby advancing e-government inclusion.

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